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USES OF OUTER SPACE

REPORT OF THE UNITED NATIONS EXPERT ON SPACE APPLICATIONS

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INTRODUCTION

1. At its thirty-third session, held at Vienna from 12 to 23 February 1996, the Scientific and Technical Subcommittee of the Committee on the Peaceful Uses of Outer Space reviewed the activities of the United Nations Programme on Space Applications. The Subcommittee noted that the 1995 activities of the Programme had been carried out satisfactorily. Upon the recommendation of the Committee, the Programme scheduled for 1996 had been endorsed by the General Assembly in its resolution 50/27 of 6 December 1995. The Subcommittee recommended to the Committee, for its approval, the activities scheduled for 1997 under the regular budget. It took note of other activities of the Programme, all of which were to be implemented as part of the space-applications-related recommendations of the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE 82), as proposed by the Expert on Space Applications in his annual report (A/AC.105/625) submitted to the Scientific and Technical Subcommittee at its 1996 session. The present report reviews the steps taken to date to translate the mandate of the Programme into operational activities.

I. MANDATE OF THE PROGRAMME

2. The General Assembly, in its resolution 37/90 of 10 December 1982, took into account the recommendations of UNISPACE 82 and expanded the mandate of the Programme to include, in particular, the following elements: (a) provision of assistance in the development of indigenous capability at the local level; (b) provision of long-range fellowships for in-depth training; (c) provision of technical advisory services to Member States and regional institutions upon request; (d) organization of regional and international training courses, seminars, workshops, conferences and technical expert meetings for the benefit of specialists, educators, managers and decision makers in order to enhance their technical capabilities and keep them abreast of ongoing developments in the discipline; (e) acquisition and dissemination of space-related information; and (f) promotion of greater cooperation between developed and developing countries, as well as among developing countries. Presented below are summaries of the activities carried out within the mandate of the Programme in 1996, those scheduled for implementation in 1997 and those proposed for 1998.

A. Development of indigenous capability

3. A major prerequisite to successful space technology applications, in developing countries, is the development of various essential indigenous capacities, particularly human resources, within each region. In recognition of such a prerequisite, the General Assembly, in its resolution 45/72 of 11 December 1990, endorsed the recommendation of the Working Group of the Whole of the Scientific and Technical Subcommittee, as endorsed by the Committee, that:

> "... the United Nations should lead, with the active support of its specialized agencies and other international organizations, an international effort to establish regional centres for space science and technology education in existing national/regional educational institutions in the developing countries" (A/AC.105/456, annex II, para. 4 (n)).

4. A progress report (A/AC.105/498) on the establishment of the centres was prepared in early 1992. An updated project document (A/AC.105/534) on the same subject was issued in January 1993. A booklet entitled "Centres for space science and technology education: education curricula" (A/AC.105/649), prepared by the Office for Outer Space Affairs of the Secretariat, was issued. The initial work on those curricula was accomplished at a workshop sponsored by the Government of Spain and organized and hosted by the University of Granada: the United Nations/Spain Meeting of Experts on the Development of Education Curricula for the Centres for Space Science and Technology Education, held at Granada, Spain, from 27 February to 3 March 1995.

I. Status of the regional centres for space science and technology education

(a) Africa

5. Both Morocco (host of the centre for French-speaking African countries) and Nigeria (host of the centre for English-speaking African countries) have drafted and circulated the agreements on the centres to be hosted by them. Those draft agreements are currently being reviewed by the African countries concerned, with a view to finalizing them at meetings to be convened by Morocco and Nigeria.

(b) Asia and the Pacific

6. The Centre for Space Science and Technology Education in Asia and the Pacific opened its doors on 1 April 1996 and admitted the first group of participants. The course focused on remote sensing and geographic information systems; it concluded with a closing ceremony on 19 December 1996. The 26 participants in the first group came from the following 15 countries in Asia and the Pacific: Azerbaijan, Bangladesh, China, Democratic People's Republic of Korea, India, Kyrgyzstan, Mongolia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand, Uzbekistan and Viet Nam. The second postgraduate course at the centre will focus on satellite communication and will be conducted from 1 January to 30 September 1997 at the Space Applications Centre of the Indian Space Research Organization, at Ahmedabad, India. Phase I of the course consisted of (a) core modules where the emphasis was on the development and enhancement of the knowledge and skills of university educators and research and application scientists and (b) Pilot Project, a mini-project oriented towards obtaining practical experience and planning and executing projects to be carried out in the home country as part of phase II of the course. Phase II is a one-year project to be undertaken by the returning scholar in his or her own country. In addition, on 30 September 1996, the Governing Board of the Centre in Asia and the Pacific held its second meeting at New Delhi. The meeting was attended by representatives of 12 countries in Asia and the Pacific and a representative of the United Nations.

(c) Latin America and the Caribbean

7. At the Third Conference of the Americas, held at Punta del Este, Uruguay, from 4 to 8 November 1996, as well as at the fifty-first session of the General Assembly, Brazil and Mexico made a joint statement indicating that they had reached an agreement on all issues regarding the functioning of the centre for Latin America and the Caribbean and that the agreement establishing the centre would be circulated to all countries in Latin America and the Caribbean. According to those two countries, the agreement, once signed by Brazil and Mexico, will subsequently be distributed to all States of Latin America and the Caribbean for their concurrence.

(d) Western Asia

8. Discussions are taking place with the interested countries in western Asia (Jordan, Saudi Arabia and the Syrian Arab Republic) on the necessary procedures for the establishment of the centre in that region.

(e) Network for central eastern and south-eastern European countries

9. At the thirty-ninth session of the Committee on the Peaceful Uses of Outer Space, held in 1996, the delegations of Bulgaria, Czech Republic, Greece, Hungary, Poland, Romania and Turkey informally consulted among themselves and reiterated their agreement that an educational system should be established consisting of a network of space science and technology education institutions and that the activities of each member of the network would be in harmony with existing institutions in Europe and open to international cooperation. Those delegations also agreed that a group of experts should be established under the aegis of

the Office for Outer Space Affairs in order to prepare a technical study for an agreed framework, and the modalities for such a network.

10. Pursuant to that agreement, a meeting of experts for informal consultations and preliminary exchange of views on the network was convened by the Office for Outer Space Affairs. The Meeting of Experts on the Establishment of a Network of Space Science and Technology Education Institutions for Central Eastern and South-Eastern European Countries was held at Vienna from 17 to 18 October 1996 with the participation of representatives of Bulgaria, Greece, Poland, Romania, Slovakia and Turkey. The report of that Meeting is contained in annex I to the present report.

11. The participating experts agreed that the Meeting should be reconvened prior to the opening of the thirty-fourth session of the Scientific and Technical Subcommittee in 1997. The date of that meeting has been set for 13 and 14 February 1997. The experts also agreed that that meeting should be the Steering Committee of the Network of Space Science and Technology Education Institutions for Central Eastern and South-Eastern European Countries and should elect its Chairman and establish its secretariat.

2. Affiliation of the centres with the United Nations

12. The General Assembly, in its resolution 50/27, endorsed the recommendation of the Committee that the centres should be established on the basis of affiliation to the United Nations as early as possible and that such affiliation would provide the centres with the necessary recognition and would strengthen the possibilities of attracting donors and of establishing academic relationships with national and international space-related institutions.

B. Long-term fellowship programmes for in-depth training

13. The Programme received five long-term fellowship offers for the period 1996-1997 from the European Space Agency (ESA). The status of the awards for the period 1996-1997 is reflected in annex II of the present report. The fellowship awards cover monthly allowances for room and board, books, local travel and health benefits. The fellowship programmes offered are described below in further detail.

14. The five ESA long-term fellowships, each of which is for a period of one year of research and study at an ESA institution, are in the following disciplines:

(a) One fellowship in Space Antennas and Propagation, one in Communications Systems and one in Remote Sensing Instrumentation, each tenable at the European Space Research and Technology Centre at Noordwijk, Netherlands;

(b) Two fellowships in Remote Sensing Information Systems, tenable at the European Space Research Institute at Frascati, Italy.

15. The fellowship awards for the period 1996-1997 were advertised in January 1996. Selected candidates will begin their studies in January 1997 at the above-mentioned ESA institutions.

C. Technical advisory services and promotion of regional cooperation

16. Various technical advisory services currently being rendered under the auspices of the Programme are described below.

1. Cooperative information network linking scientists, educators, professionals and decision makers in Africa

17. The cooperative information network linking scientists, educators, professionals and decision makers in Africa (COPINE) project (see annex III) which was brought to the attention of the Committee at its thirty-ninth session, has made significant progress. The latest phase in the effort is the organization of two meetings on user needs: the first, dealing with non-health sectors, was held at Pretoria, South Africa, from 25 to 27 September 1996; and the second, dealing with the health sector, was held at World Health Organization (WHO) headquarters from 9 to 10 December 1996. Those two meetings brought together the African countries participating in the project with a view to determining the user needs for the various aspects of the COPINE system. Participating in the second meeting were representatives of 10 African countries (Ghana, Malawi, Morocco, Mozambique, Namibia, Nigeria, South Africa, Tunisia, United Republic of Tanzania and Zimbabwe), the Office for Outer Space Affairs, WHO, ESA and European Systems. The meeting began with a review of the principal objectives of COPINE, namely: the strengthening of capabilities for sustainable development, the development of an improved response to humanitarian needs in rural areas and the implementation of a partnership programme between Africa and Europe with the participation of the private industries on both continents. The meeting concluded with each of the African countries identifying their specific requirements, most of which fell within the areas of health care, education, environmental management, science and technology research, sustainable agriculture and food security, and natural resource development.

18. ESA and the United Nations agreed to refine the COPINE project document with all the input that had been provided by the African countries. The document, which defines the COPINE architecture that will be utilized to address the user needs as defined by each participating country, has been completed and forwarded to each of the African countries for their comments. The final document, which will also reflect activities that are being supported by aid programmes as well as by the United Nations Development Programme and the World Bank, will subsequently be submitted to potential donors. Plans are being made to hold a meeting between the participating African countries and the potential donors in London in the first week of March 1997.

2. Inter-agency project proposal on the satellite-based disaster warning broadcasting system

19. The General Assembly, in its resolution 50/117 B of 20 December 1995, emphasized that early warnings of impending natural disasters and similar disasters with an adverse impact on the environment, linked to effective disaster preparedness measures and their effective dissemination, using telecommunications, including broadcast services, were key factors to successful disaster prevention and preparedness. In response to that, it was proposed that an inter-agency project should be developed, in cooperation with interested United Nations agencies, to implement a satellite-based broadcasting system for rural, remote and outer communities of small island developing States to provide sudden onset natural disaster warning capability.

20. Three factors have governed the definition of the scope of the project proposal: (a) cost, (b) simplicity of warning message and (c) speed and reliability of the warning message delivery.

21. The project proposal was initially presented at the Inter-Agency Meeting on Outer Space Activities, held at Vienna from 7 to 9 February 1996, where it was positively commented upon. Since then, positive official responses have been received on the project from the secretariat of the International Decade for Natural Disaster Reduction, the United Nations Educational, Scientific and Cultural Organization, the World Meteorological Organization, the International Telecommunication Union (ITU), the International Mobile Satellite Organization (Inmarsat), the Asia-Pacific Satellite Communications Council (APSCC) and regional and national organizations responsible for disaster mitigation (both public and private entities).

22. The following steps are being taken in respect of the project:

(a) An ad hoc meeting of experts from the above-mentioned institutions and organizations is proposed for early 1997 with a view to:

(i) Consolidating the interest of the agencies concerned in the project for small island developing States;
(ii) Defining responsibilities among participants in the project;
(iii) Defining the various phases for accomplishing the goals of the project;
(iv) Outlining a pilot project particularly for the Caribbean countries;
(v) Exploring the interest of the private sector on the project;

(b) The above-mentioned meeting will be followed by a technical study later in 1997 on the proposed project on risk management (disaster mitigation and coastal management) in the Caribbean.

3. Regional conference for decision makers in Africa

23. The Second United Nations Regional Conference on Space Technology for Sustainable Development in Africa was organized at Pretoria from 4 to 8 November 1996. The theme of the Conference was "The role of space technology in addressing local needs". The objective of the Conference was to examine the reasons for the lack of exploitation of cost-effective space technology opportunities in Africa and the key role that decision makers could play in improving the current situation.

24. The Conference concluded with the Pretoria Memorandum on Space Technology for Africa, in which it stated that if Africa was to have relevance in the emerging technologies of the twenty-first century, a major catalyst would have to be the political will and commitment of African leaders to champion the cause of scientific and technological development in Africa and to provide it with appropriate policies, financial and other resources and an enabling environment. Accordingly, the Conference called on the Office for Outer Space Affairs to organize, through the United Nations Programme on Space Applications, an African leadership conference at which Africa's decision makers would address Africa's need to understand space technology, its beneficial roles in national, social and economic development and the commitment required for accomplishing the latter.

4. Asia-Pacific Satellite Communications Council

25. APSCC was inaugurated with the support of the United Nations Programme on Space Applications in 1994. Since then, it has been promoting telecommunications service by satellites in Asia and the Pacific. In June 1996, 54 governmental, private, regional and global entities were listed as APSCC members.

26. APSCC is concentrating on professional activities such as seminars, workshops, special training and the generation of study reports and recommendations to help policy makers in the field of satellite communications to better understand issues from this region and around the globe.

27. The successes of the APSCC conferences in 1994 and 1996 and the rapid growth of its membership attest to the importance of satellite communications to Asia and the Pacific. It also clearly demonstrates the need for APSCC in that region. The 1996 APSCC conference and exhibition provided an excellent opportunity for all professionals in satellite communication fields to interact with one another by exchanging ideas and opinions.

28. The conference organizers made the right decision in placing special emphasis at the 1996 APSCC conference on the contribution of satellite/HALE technology to global information infrastructure. The decision of the APSCC host country, the Republic of Korea, to launch its own broadband satellite,

KOREASAT 3, in 1999 confirms the importance of this trend. It is also in line with the Seoul declaration on Asia-Pacific information infrastructure.

D. Training courses, workshops, conferences and symposia organized by the United Nations

1. Activities carried out in 1996

29. In 1996, six workshops, three conferences, one training course and one symposium were conducted under the auspices of the Programme. A summary of each of these activities is given in annex IV to the present report.

2. Activities scheduled for implementation in 1997

30. The training courses, workshops, conference and symposium scheduled for 1997 are shown in annex V.

3. Activities proposed for implementation in 1998

31. Of the following activities proposed for 1998, all except the Eighth United Nations/Sweden Training Course will be used as avenues to prepare member States for the special session of the Committee, open to all Member States of the United Nations (UNISPACE III):

(a) United Nations/European Space Agency Workshop on Microwave Remote Sensing Applications, Malaysia (Asia and the Pacific);

(b) United Nations Regional Conference for Decision Makers on Space Technology Development (Africa);

(c) Eighth United Nations/Sweden International Training Course on Remote Sensing Education for Educators;

(d) Information Technology for Development (Latin America and the Caribbean);

(e) Third United Nations Conference on Spin-off Benefits of Space Technology.

E. Space information

32. The 1997 edition of *Seminars of the United Nations Programme on Space Applications* (A/AC.105/650), the eighth in the series of selected papers from the activities of the Programme, has been issued.

33. In order to keep the Member States and the general public informed of the latest developments in activities carried out by the United Nations Programme on Space Applications, the home page of the Programme was established on Internet within the home page of the Office for Outer Space Affairs. The home page, which is accessible through the World Wide Web using the address http://www.un.or.at/OOSA_kiosk/sapidx.html, contains information on activities that have been implemented as well as reports and press releases issued within the framework of the Programme. The schedules, objectives and programmes of planned activities are also included in the home page.

II. VOLUNTARY CONTRIBUTIONS

34. The successful implementation of the activities of the Programme in 1996 benefited from the support and voluntary contributions of Member States and their institutions, as well as from the assistance and

cooperation of regional and other international governmental and non-governmental organizations. In 1996, the Programme received voluntary contributions, both in money and in kind, including the sponsorship of technical and scientific presentations by several experts, as described below.

35. A number of Member States (Australia, Austria, Brazil, Chile, China, Germany, Italy, Japan, Pakistan, Philippines, South Africa, Spain, Sri Lanka, Sweden and United States of America) and governmental and non-governmental organizations (Department for Development Support and Management Services of the Secretariat, ITU, Austrian Space Agency, Centre national d'études spatiales (CNES) of France, European Commission, ESA, German Space Agency (DARA), GlobalStar, Inmarsat, Inter-American Development Bank, International Centre for Theoretical Physics, International Telecommunications Satellite Organization, International Astronautical Federation (IAF), Institute for Space an Astronautical Science, National Aeronautics and Space Administration (NASA) of the United States, National Space Development Agency (NASDA) of Japan, Nuova Telespazio, Restech of Japan, the Planetary Society) provided support for the activities of the Programme in 1996 in various ways, including the following:

(a) Defrayal of the local expenses of candidates from developing countries in the long-term fellowship programmes (see annex II);

(b) Voluntary cash contributions received in 1996 from the Governments of Austria ($20,000) and Pakistan ($8,000) in support of the activities of the Programme; from the Government of Spain ($20,500) in support of the International Conference on Small Satellite Missions, held at Madrid from 9 to 13 September 1996; from NASA ($10,000), Nuova Telespazio ($5,000) and Earth Observation Satellite Company (EOSAT) ($3,000) in support of the Second United Nations Regional Conference on Space Technology for Sustainable Development in Africa, held at Pretoria from 4 to 8 November 1996; and from IAF ($10,000) in support of the United Nations/International Astronautical Federation/European Space Agency Workshop on Education Awareness: Space Technology Application in the Developing World, held at Beijing from 3 to 6 October 1996;

(c) A financial contribution ($130,000) received from ESA in support of specific 1996 activities of the Programme as reflected in annex IV;

(d) Defrayal - by the Government of Austria, the province of Styria and the city of Graz - of the costs of air travel, per diem, accommodation of participants and the necessary logistics and a contribution received from the European Commission ($30,000) in support of the organization of the United Nations/Austria/European Space Agency/European Commission Symposium on Space Technology Applications for the Benefit of Developing Countries, held at Graz, Austria, from 9 to 13 September 1996;

(e) Co-sponsorship of the activities of the Programme and, in particular, defrayal of the costs of international air travel of participants, local organization and facilities, room and board, and local transportation (see annex IV);

(f) Sponsorship (travel and daily subsistence allowance) of experts from Member States to make technical presentations and take part in deliberations on the activities of the Programme (see annex IV).

III. FINANCIAL PROVISIONS AND ADMINISTRATION OF ACTIVITIES IN 1997

36. The activities of the Programme in 1997 covered in the present report will be implemented as follows:

(a) *Financial provisions.* Under the United Nations regular budget, a sum of $524,500 was approved by the General Assembly at its fiftieth session for implementing the activities of the Programme during the biennium 1996-1997. Because of the financial crisis of the United Nations, that amount was reduced by

$152,300 in 1996. That reduction, combined with the costs of implementing the 1996 activities, leaves a balance of $160,000. In order to effectively carry out its mandated and expanded activities, it has become necessary for the Programme to solicit additional funds, in the form of voluntary contributions, in support of its activities. Those contributions will be used to supplement the regular budget of the Programme;

(b) *Administration by and contributions and participation of staff.* The Office for Outer Space Affairs, and in particular the Expert on Space Applications and his staff, will carry out the activities described in the present report. In that connection, travel will be undertaken as appropriate by the Expert and his staff under the provisions of the travel budget of the Office for the biennium, as approved by the General Assembly at its fiftieth session, and as necessary from voluntary contributions;

(c) *Consultations, instructors, speakers and technical materials.* Up to 30 specialists (necessitated, in particular, by the work associated with the establishment and operation of the regional centres for space science and technology education) will be required to serve as instructors, speakers and consultants during the implementation of the activities of the Programme in 1997. Expenses incurred in respect of the travel and per diem of the specialists and for necessary technical materials will be met partly from the regular budget and partly from voluntary contributions received from Member States and international organizations.

Annex I

INTERIM REPORT OF THE MEETING OF EXPERTS ON THE ESTABLISHMENT OF A NETWORK OF SPACE SCIENCE AND TECHNOLOGY EDUCATION INSTITUTIONS FOR CENTRAL EASTERN AND SOUTH-EASTERN EUROPEAN COUNTRIES, HELD AT VIENNA FROM 17 TO 18 OCTOBER 1996

I. BACKGROUND

1. At the thirty-ninth session of the Committee on the Peaceful Uses of Outer Space, held in June 1996, the delegations of Bulgaria, Czech Republic, Greece, Hungary, Poland, Romania and Turkey informally consulted among themselves and reiterated their agreement that an educational system should be established consisting of a network of space science and technology education institutions and that the activities of each member of the network would be in harmony with existing institutions in Europe and open to international cooperation. Those delegations also agreed that a group of experts should be established under the aegis of the Office for Outer Space Affairs of the Secretariat in order to prepare a technical study for an agreed framework and modalities for such a network.

2. Pursuant to this agreement, a meeting of experts for informal consultations and preliminary exchange of views was convened by the Office for Outer Space Affairs on 17 and 18 October 1996. The Meeting of Experts on the Establishment of a Network of Space Science and Technology Education Institutions for Central Eastern and South-Eastern European Countries was held at Vienna with the participation of representatives of Bulgaria, Greece, Poland, Romania, Slovakia and Turkey.

II. PROGRAMME OF THE MEETING

3. The Meeting was welcomed by the Deputy to the Director-General of the United Nations Office at Vienna and Director of the Office for Outer Space Affairs, who subsequently called on the delegates to elect a chairman. V. Cassapoglou (Greece) was elected Chairman by acclamation. Upon the invitation of the Chairman, the Expert on Space Applications made an introductory presentation on the concept of the education network being proposed. Thereafter, the delegates addressed the Meeting; they spoke in the following order: Bulgaria, Greece, Poland, Romania, Slovakia and Turkey.

4. The delegates presented the capabilities of their respective countries in different aspects of space science and technology and related applications such as space and atmospheric sciences, satellite meteorology, satellite communications, remote sensing and Geographical Information System, micro-gravity, space medicine, space manufacturing, mini- and micro-satellites.

5. From these presentations, it became apparent that all the countries had cooperation agreements or relationships in different fields of space science and technology with such countries as the Russian Federation and the United States of America and entities such as the European Space Agency and United Nations agencies dealing with space science and technology.

6. Of importance to this particular Meeting was the commitment of each of these countries to cooperate with one another within the proposed education network, whose prime objective would be to serve the immediate region, but it would also be open to the global space science and technology community.

III. DISCUSSIONS

7. The discussions that followed the presentations touched upon many subjects, including the following:

(a) The common goals/focus of the proposed network;

(b) The manner in which the proposed network would operate;

(c) How each country would fit into the proposed network.

IV. DECISIONS OF THE MEETING

8. Following the exchange of views and presentation of proposals on these issues, the delegates agreed as follows:

(a) To establish an education network within the framework identified at the thirty-third session of the Commission (see paragraph 1 above);

(b) The focus of the network should be on education with related research and application projects; such projects and applications programmes should be education-oriented at a higher level;

(c) To arrive at a common name and related acronym for the proposed network.

9. The network should not duplicate ongoing university educational programmes. It could, however, cooperate with universities and other higher education and research institutions in order to achieve national and regional objectives.

V. STEPS TO BE TAKEN

10. The network should be operated through a Steering Committee. Such a committee should include representatives of each member State of the network. In addition:

(a) The National Coordinators appointed by each country could serve as representatives of their countries in this Steering Committee;

(b) The Steering Committee should establish its own rules of procedure, including all the elements of its own secretariat. As an interim measure, the Office for Outer Space Affairs should serve as the secretariat of the Steering Committee until all appropriate establishment steps are fulfilled. The chairmanship of the secretariat should rotate in a manner to be determined by the Steering Committee. The Office for Outer Space Affairs should serve in the capacity of advise and observer in the Steering Committee.

11. The delegates agreed that, initially, there was a need for exchange of information on two key areas:

(a) Space activities in each country: this should include a list of main research topics and projects with a short project description and status of accomplishments to date;

(b) Space-related educational programmes in each country: this should consist of the specific fields and a description of the education programme in each specified field.

12. Information on the above should be coordinated by a core institution that would represent each country within the network. Such a core institution should be very familiar with the national activities of the programme in the areas of space science and technology. It would be the responsibility of each national coordinator to work within his or her country for the identification of such a core institution.

13. The information so compiled by each country on its space activities and space-related education programmes should be forwarded to the Office for Outer Space Affairs at Vienna no later than 13 December 1996. The name and related details of the core institution should also be provided to the Office by that date.

14. The Office for Outer Space Affairs should prepare - no later than 15 January 1997 - a document hereinafter referred to as "the composite document". The composite document, which should consist of information from all participating countries, should be forwarded immediately thereafter by the Office to all participating countries in order that each country could:

(a) Study the activities of other countries, vis-à-vis its own;

(b) Identify overlaps;

(c) Identify areas of common interest;

(d) Propose areas of regional cooperation within the proposed network.

15. All participating countries in this project should provide to the Office for Outer Space Affairs the information on the subjects described in paragraph 14 above by 10 February 1997.

16. The responses indicated in paragraph 15 above should contain each country's proposals on its specific interest and proposed areas of cooperation within the network, which could subsequently be used to conduct a technical study that would define the specific focus/programme of the network. Such a technical study should address:

(a) The practical details of the network and the projects that could be undertaken by each country within the network;

(b) The objectives of the network, which would be specified after finalizing the technical study.

The mechanism for undertaking this technical study should be determined by the Steering Committee in cooperation with the Office for Outer Space Affairs. This subject should be discussed at the resumed session of the Meeting.

17. The above technical study should be completed in April 1997, and its report issued and circulated to all participating member States by May 1997.

18. The Meeting took note of all the national programmes presented by all the delegations and looked forward to receiving further information as requested in paragraphs 11 and 12 above, and which would be included in the composite document.

19. The Meeting also noted that in order to facilitate the exchange of views among member States, it could be useful to publish a newsletter and to establish a home page on the World Wide Web. The Meeting noted that Turkey had offered to serve as editor of the newsletter.

20. The Meeting agreed that the Steering Committee should be constituted as proposed above and should follow up on the conclusions identified in this report.

21. The Meeting took note that countries participating in the establishment of the network should consider hosting a number of education activities in the field of space science and technology for the benefit of all member States of the network.

22. The Meeting agreed that other countries of the region were encouraged to join the network.

23. The Meeting was adjourned to be reconvened under the current Chairman, a week before the thirty-fourth session of the Scientific and Technical Subcommittee, which would be held from 17 to 28 February 1997.

24. The Meeting agreed that the resumed session of the Meeting should be attended by the national coordinator (and his or her alternates) of each participating country. Before its adjournment, the resumed session of the Meeting should constitute itself as the Steering Committee of the Network of Space Science and Technology Education Institutions for Central Eastern and South-Eastern European Countries and should elect its Chairman and establish its secretariat.

Annex II

LONG-RANGE FELLOWSHIPS OFFERED BY THE EUROPEAN SPACE AGENCY WITHIN THE FRAMEWORK OF THE UNITED NATIONS PROGRAMME ON SPACE APPLICATIONS, 1996-1997

Period	*Country or organization*	*Subject*	*Financial support by host country or organization*	*Fellow-ships offered*	*Candidates selected*	*Applications submitted*	*User countries (one or more candidates)*
1996/1997	ESA	Space antennas and propagation	Subsistence allowance	1	1	16	Brazil
1996/1997	ESA	Remote sensing information	Subsistence allowance	2	2	18	Jordan Algeria
1996/1997	ESA	Communications system	Subsistence allowance	1	1	26	Costa Rica
1996/1997	ESA	Remote sensing instrumentation	Subsistence allowance	1	1	1	Algeria

Annex III

COOPERATIVE INFORMATION NETWORK LINKING SCIENTISTS, EDUCATORS, PROFESSIONALS AND DECISION MAKERS IN AFRICA

I. WHAT IS COPINE

1. When operational, the cooperative information network linking scientists, educators, professionals and decision makers in Africa (COPINE) would be a satellite information exchange network with interactive capability linking urban and rural centres in 13 African countries (Botswana, Eritrea, Ghana, Malawi, Morocco, Mozambique, Namibia, Nigeria, South Africa, Tunisia, Uganda, United Republic of Tanzania and Zimbabwe) and selected hospitals, universities/institutions and documentation/information supply centres located in Europe initially and elsewhere. The COPINE network would not be a competitor to public switched networks but would be a network whose success could generate traffic for future public networks in Africa and corresponding revenue to their operators. COPINE would offer possibilities for data exchange that would be superior to those presently available via Internet and might serve to complement available Internet services.

2. COPINE operations would be overseen by a management board that would be comprised of representatives from participating countries, entities and organizations that financially support the project.

3. Countries participating in COPINE would be expected to provide (a) suitable facilities to house and operate the earth stations, (b) local technical and administrative personnel, (c) operation and maintenance of COPINE equipment and (d) a one-time contribution of US$ 100,000-250,000.

4. COPINE would strengthen collaboration between and among selected universities and institutes within Africa, as well as with their counterparts in Europe and the international community and thus provide a vehicle for the transfer of know-how and technology in a number of priority application fields described below.

A. Health care (tele-medicine)

5. Medical units in less developed and rural areas could, using COPINE, draw upon the expertise as well as the facilities of better equipped central hospital facilities in urban areas. COPINE would facilitate the transfer of high-resolution images of, for example, X-rays, computer tomography and other visual information on a patient's condition. This would permit the solicitation of advice and the delivery of consultations by non-local experts in diagnosing difficult cases. COPINE would also facilitate the exchange of data files and texts through facsimile and electronic mail (e-mail).

6. The proposed tele-medicine application is aimed at improving health care within rural areas. It would also facilitate monitoring and coordination of health-care activities at the national and regional levels. In addition, the COPINE system could, in conjunction with other systems of information on health statistics, be used to assess, for example, the magnitude and geographical extent of disease outbreaks, such as the outbreak of tuberculosis and other plagues. Furthermore, COPINE could be used to support the training of medical staff in remote rural areas, following the occurrence of such outbreaks or on a regular basis, using well-established distance learning methods by specialists at either national, regional or international locations.

B. Exchange of scientific and technical information

7. Scientists in universities and research institutes in different African countries would be able to use COPINE to exchange ideas, data and experiences that would improve the definition of regional interests and problems; COPINE would thus stimulate scientists in different countries to work together on projects of common interest. Collaborative projects would pool the know-how and the resources of several interested

institutions to jointly tackle important problems regarding, in particular, health care, food security (land cover and land use, soil erosion, agricultural productivity, research on crop yield and seed resistance) and environmental conditions, all of which are of common concern to African countries.

C. Management of natural resources and the environment

8. Satellite remote sensing and Geographical Information Systems (GIS) provide an appropriate and necessary information base for the management of natural resources and the environment. The coverage of large areas of the surface of the Earth offered by environmental satellites makes it possible to observe, in near real-time, global change processes that influence and determine regional and national environmental conditions. Timely and efficient access to data acquired from environmental satellites would help developing countries to plan actions to avoid the adverse effects of forthcoming environmental catastrophes such as drought, flooding and large-scale infestations. The COPINE system would link remote sensing and environment centres in the participating African countries to acquisition stations and processing and archiving facilities located in Europe as well as in Africa.

D. Tele-education

9. Educational centres in Africa equipped to access COPINE could use the system to transmit educational information to educators in rural areas. In addition to digital data, graphics and facsimile, distance learning sessions using COPINE could be supported by live video transmission with characteristics corresponding to that of modern videoconferencing systems. Through its e-mail connection, COPINE would offer Africa's social and physical scientists, as well as government entities, electronic access to databases around the world.

10. The objective of the tele-education application of the COPINE system would be to improve the quality of education in remote rural areas by providing educators in these areas with a tool that would give them easy and efficient access to the education centres of their countries. The quality of education in rural areas could then be improved by broadening the basis upon which the educators work. Joint projects involving educators in several rural locations and at education centres could be undertaken using the COPINE communication system to monitor the progress of the projects and to coordinate the results achieved by the participants.

II. USER COMMUNITY

11. The users of the system would include non-profit entities supported and financed by the Governments in their countries (e.g. universities, institutions of technology, research and application centres and health-care institutions that are engaged in programmes aimed at responding to the major development needs of the greater population in African countries). In both Africa and Europe, the COPINE system would be established at institutions of talent, including hospitals and leading universities with creditable science and technology programmes. The participating centres in Europe would support the participants in Africa in three major fields: (a) collaboration in research; (b) the provision of background information on medicine, science, technical programmes and applications; and (c) the supply of satellite remote sensing data products and technical support in remote sensing data analysis and applications.

12. In order to ensure that participants in Africa are able to take full advantage of the COPINE system and to ensure that they gain the necessary know-how from participating in the project that they can use to further the activities started under this project, training of the participants in the use and application of the system is an important element of the preparations for its operational phase. Training sessions would be organized by persons in the areas of industry responsible for developing and manufacturing the system, as well as by other specialists recruited for the project.

III. TYPES OF INFORMATION-EXCHANGE SUPPORTED

13. *Computer file transfer*. Computer files to be transmitted through the COPINE system would be those that are commercially available within the file size 1-105 megabytes (Mb). For example, large files, containing 45-105 Mb of data, could contain raw, pre-processed or processed image data acquired from environmental satellites. Similarly, smaller files of about 2 Mb could contain information related to medical or scientific processes, high-resolution document images or environmental situation maps.

14. *Interactive data transfer*. The COPINE system would offer its users the possibility of interactively searching and retrieving information from distant archives.

15. *Document transmission*. The capacity in the COPINE system would make it possible for its users to transmit "documents" in the form of images and hard copy (facsimile, scanner, high-resolution-slow scan-video etc.), as well as character coded text and messages compatible with e-mail services. The broadcast feature of the satellite downlink may be drawn upon to transmit simultaneously the same document to several destinations. All Earth stations in the network would be able to transmit and receive electronic records of documents.

16. *Image and video transmissions*. When the capacity in the satellite is not occupied by other data transmissions, the Type I Earth stations could use the available capacity to transmit and receive video or imagery signals with a quality corresponding to at least that of modern videoconferencing systems.

17. *Voice communication*. For cases when fast coordination is necessary and in order to facilitate efficient working-level communications, it is proposed to offer the users of COPINE the possibility of selective voice communication. In line with the conditions under which the COPINE system would operate, the use of the system for voice communication must be agreed to by the telecommunication authorities (e.g. PTT) in each of the countries concerned.

IV. EARTH STATIONS

18. Two types of Earth stations that would be served by the same INTELSAT satellite are currently envisaged. The larger of the stations (Type I) would be sited on the premises of each designated host university/institution, while the smaller station (Type II) could be used, as may be appropriate, in rural areas and other locations in each participating country. Participating centres in Europe would be connected to Type I stations in Africa. The Type I station in Africa would serve as a national hub that would communicate with smaller Type II stations in the rural areas and other areas of each participating country. Type I stations in different countries in Africa would communicate with each other as well as with the Type I stations in Europe.

19. The Type I Earth station is capable of handling all types of traffic transmitted in the network at a rate of up to 384 kbit/s. In addition to supporting all kinds of data traffic, it is capable of transmitting and receiving imagery and video signals at 384 kbit/s (and 2,048 kbit/s). The Type II Earth station is modest in its size and capabilities. It is capable of transmitting and receiving data (and where appropriate voice) at a rate of up to 64 kbit/s. In general, the Type II stations would be transportable, so that they could easily be relocated to serve different projects in rural areas or to the sites of important scientific or environment events in Africa.

V. DEVELOPMENT OF THE COPINE PROPOSAL

20. A call for action by African professionals to improve the existing state of information exchange within Africa was articulated at the United Nations Regional Conference on Space Technology for Sustainable

Development in Africa, held at Dakar, Senegal, from 25 to 29 October 1993. The COPINE proposal was developed in response to this call.

21. The MERCURE system (a satellite-based telecommunication system being established for the benefit of the United Nations Environment Programme) is technically very similar to a system that would fulfil the information-exchange needs of the African countries as recommended at the Dakar conference. The COPINE proposal has thus been prepared in close consultation with the secretariat of the MERCURE Governing Board by the Office for Outer Space Affairs at Vienna. The Office would play a catalytic and supporting role in the realization and operation of the COPINE project. Specifically, the Office would act as liaison with other relevant United Nations organizations and would organize the participation of COPINE users in Africa.

VI. PRESENT STATUS

22. A detailed project document which would be presented to potential donors is being prepared. The World Health Organization (WHO) has been asked to coordinate the preparation of those aspects of the project document dealing with health applications of the COPINE system. This preparation is being financially supported by several member countries of the MERCURE Governing Board. The Office for Outer Space Affairs would coordinate the preparation of all non-health applications following a meeting scheduled for September 1996 at Pretoria, South Africa, at which interested African countries would participate.

23. Presentation of a final version of the project document to potential donors is now scheduled for November 1996.

VII. FOR MORE INFORMATION

24. All communications should be directed to:

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25. Telephone enquiries may also be directed to Hubert George at (43 1) 21345-5631. Alternatively, he may be contacted via e-mail at *hgeorge@unov.un.or.at*.

26. Updated information on this proposal as well as on other activities of the Office for Outer Space Affairs can be found on Internet at the following address: *http://www.un.or.at/OOSA_Kiosk/*.

Annex IV

SUMMARY OF UNITED NATIONS TRAINING COURSES, WORKSHOPS, CONFERENCES AND SYMPOSIA HELD IN 1996

Title, location and date	*Sponsoring country/ organization (host institute)*	*(a) Funding and nature of support* *(b) Number of participating countries and organizations* *(c) Total number of participants*	*Outcome of activity*
United Nations/European Space Agency Workshop on Basic Space Science Colombo, Sri Lanka 11-13 January 1996	Government of Sri Lanka, the United Nations and the European Space Agency (ESA)	(a) Air travel and subsistence for 32 participants (United Nations and ESA); additional support by other organizations are reflected in the report of the Workshop. Facilities, equipment and local transportation (Sri Lanka) (b) 25 countries (c) 74 participants	A 45 cm Goto astronomical telescope (and supporting equipment) arrived in 1995 in Sri Lanka and was installed jointly by the Governments of Japan and Sri Lanka. As part of the inauguration activity of the telescopy facility at the Arthur C. Clarke Center for Modern Technologies in Sri Lanka, the United Nations, in cooperation with ESA organized this workshop focusing on education and research with small astronomical telescopes and their worldwide networking. (Detailed report contained in document A/AC.105/640.)
United Nations/United States of America International Conference on Spin-off Benefits of Space Technology: Challenges and Opportunities Colorado Springs, Colorado, United States of America 9-12 April 1996	Government of the United States and United Nations	(a) Air travel and daily subsistence allowance (DSA) for 14 participants (United Nations and United States/National Aeronautics and Space Administration (NASA); air travel for 4 participants (United Nations) (b) 22 countries and international organizations (c) 73 participants	The Conference exposed the participants to several spin-off benefits of space technology, marketing and use of technologies, and industry experiences from both the United States and developing countries. Aspects of spin-offs explored included solar energy, fisheries operation, telecommunications, health and telemedicine, precision agriculture and crop yield assessment, navigation and global positioning, and global monitoring of natural resources and the environment. Participants also discussed, in working group sessions, what they felt was necessary in order to learn more about these available technologies and how they could be effectively utilized in their respective countries. (Detailed report contained in document A/AC.105/642.)

Title, location and date	*Sponsoring country/ organization (host institute)*	*(a) Funding and nature of support* *(b) Number of participating countries and organizations* *(c) Total number of participants*	*Outcome of activity*
United Nations/European Space Agency Workshop on Microwave Remote Sensing Applications Manila, Philippines 22-26 April 1996	Government of the Philippines, ESA and the United Nations	(a) Air travel and DSA for 20 participants (United Nations and ESA); conference facilities and equipment, local transportation and midday meals for all the participants (the Philippines) (b) 26 countries and international organizations (c) 68 participants	The Workshop exposed the participants to various aspects of current and future microwave remote sensing systems and applications of radar data to natural resources exploration and environmental monitoring. The experiences and programmes of a number of countries, including those particularly from the Asia-Pacific region, in the development and application of microwave remote sensing, were featured. During the Workshop discussions, the participants considered *inter alia* the issues related to: data availability and accessibility; practical application of radar data; and required education and training. (Detailed report contained in document A/AC.105/655.)
Sixth United Nations/Sweden International Training Course on Remote Sensing Education for Educators Stockholm/Kiruna, Sweden 6 May-14 June 1996	Government of Sweden and the United Nations (Stockholm University, Swedish Space Corporation, SSC Satellitbild)	(a) Air travel (United Nations and Sweden); All other expenses (Swedish International Development Agency (SIDA)) (b) 18 countries and Palestine (c) 26 participants	The following recommendations made by the participants were aimed at improving the course to make it even more responsive to evolving needs in their countries and academic institutions: (a) the parts of the course dealing with visual image interpretation and remote sensing curricula should be shortened; (b) the parts of the course dealing with digital image processing, GIS, radar, and cost-benefit analysis should be expanded; (c) the availability of satellite images of their home countries requested by participants for use during the training course should be improved; (d) the amount of free time allowed to participants to review the copious volume of technical material presented during lectures should be increased. The Office for Outer Space Affairs is in consultation with Stockholm University and SIDA on how to address the above recommendations, including the feasibility of holding a more advanced course for educators in remote sensing. (Detailed report contained in document A/AC.105/643.)

Title, location and date	*Sponsoring country/ organization (host institute)*	*(a) Funding and nature of support* *(b) Number of participating countries and organizations* *(c) Total number of participants*	*Outcome of activity*
United Nations/Chile/ European Space Agency Regional Workshop on Space Technology for Prevention and Mitigation of the Effects of Disasters Santiago, Chile 1-5 July 1996	Government of Chile, ESA and the United Nations	Air travel and DSA for 27 participants (United Nations, Chile and ESA) (b) 28 countries and organizations (c) 180 participants	The Workshop addressed the effects of disaster on human life and supporting role of space techniques in such areas as geological and meteorological hazards, disaster preparedness and warning, disaster mitigation and relief, comprehensive assessments of natural hazards risks integrated into national development plans, mitigation plans of practical measures for application at national and local levels; and ready access to global, regional, national and local warning systems. The major outcome of the Workshop was the signing by the representatives from 12 countries in Latin America and by representatives from Spain of the Inter-American Declaration on Joint Activities for Integrated Development of Civil Protection and Defence emphasizing the use of space technology to combat disasters. (Detailed report contained in document A/AC.105/655.)
Thirty-First Scientific Assembly of the Committee on Space Research (COSPAR) Birmingham, United Kingdom 14-21 July 1996 (Panel on Space Science in Developing Countries)	COSPAR and the United Nations	(a) Air travel and per diem for 12 participants (COSPAR and the United Nations)	The Panel reviewed space education developments in different parts of the world. The Panel also discussed one of the major issues, i.e., data analysis, that confront the developing countries in the utilization of space-acquired data. The Panel unanimously agreed that understanding the data acquired by a variety of satellites is a major bottleneck in the development process. Accordingly, the Panel agreed that a special seminar should be convened in the second half of 1997 in Brazil, under the auspices of COSPAR and the Office for Outer Space Affairs, to expose member States to the access, analysis and interpretation of data acquired by Earth observation satellites.

Title, location and date	*Sponsoring country/ organization (host institute)*	*(a) Funding and nature of support* *(b) Number of participating countries and organizations* *(c) Total number of participants*	*Outcome of activity*
United Nations/Austria/ European Space Agency/European Commission Symposium on Space Technology Applications for the Benefit of Developing Countries Graz, Austria 9-13 September 1996	Government of Austria, ESA and United Nations	(a) Air travel and DSA (Austria, United Nations, European Commission and ESA) (b) 48 countries (c) 90 participants	In the course of the Symposium, presentations and discussions focused on specific issues related to the overall themes of the meeting, including space technology applications for environmental and developmental programmes, space applications for social development and combating environmental pollution as well as space systems for ocean resource management. In addition, presentations specifically addressed the potential of space technology to support international drug control programmes and the detection of land mines in post-war areas. The objective of the Symposium was to convince policy and decision makers in developing countries of the value of providing resources to space applications in support of national and regional development. (Detailed report contained in document A/AC.105/646.)
United Nations/European Space Agency Workshop on Basic Space Science Bonn, Germany 9-13 September 1996	German Space Agency (DARA), ESA and the United Nations	(a) Air travel and DSA for 30 participants (United Nations, ESA and DARA); expenses for other participants (Austrian Space Agency, CNES, ICTP, Institute for Space and Aeronautical Sciences of Japan, NASA and The Planetary Society). Facilities, equipment and local transportation (DARA) (b) 34 countries and organizations (c) 120 participants	The Workshop reviewed the successful implementation of a number of follow-up projects that emanated from the workshops in the past six years: (a) the inauguration of the astronomical telescope facility at the Arthur C. Clarke Centre for Modern Technologies in Sri Lanka; (b) the operation of the radio telescope for mapping the galactic emission at long wavelengths in Colombia; (c) the establishment of the Central American Astronomical Observatory in Honduras; and (d) the refurbishment of the Kottamia telescope in Egypt and the Egyptian Mars drill project to be part of the United States/Russian Mars mission in 2001. As a result of this Workshop, consultation is now in progress with the Third World Academy of Sciences (TWAS) to revitalize basic space science activities and programmes in Africa. (Detailed report contained in document A/AC.105/657.)

Title, location and date	*Sponsoring country/ organization (host institute)*	*(a) Funding and nature of support* *(b) Number of participating countries and organizations* *(c) Total number of participants*	*Outcome of activity*
United Nations/European Space Agency International Conference on Small Satellite Missions Madrid, Spain 9-13 September 1996	Government of Spain, ESA and the United Nations	(a) Air travel and DSA for 17 participants (United Nations and Spain); conference facilities, equipment and local transportation (INTA); (b) 35 countries (c) 230 participants	The Conference brought together engineers, scientists, space agencies and space industries, that analysed the state of the art of small satellites technology, including: (a) development and design of payloads system; (b) current and future programmes; (c) economic and legal issues; (d) small mission launchers; and (e) international cooperation. Major outcome of the Conference was an announcement of cooperation between Argentina, Chile, Mexico and Spain to develop a mini-satellite. (Detailed report contained in document A/AC.105/645.)
United Nations/International Aeronautics Federation/ European Space Agency Workshop on Education Awareness: Space Technology and Application in the Developing World Beijing, China 3-6 October 1996	Government of China, International Aeronautics Federation (IAF), ESA and the United Nations	(a) Air travel and DSA for 30 participants (United Nations, China, ESA, IAF) (b) 34 countries and institutions (c) 100 participants	At the Workshop, national and transnational space projects were introduced. The Workshop addressed specific issues related to the value of space technology for sustainable development and environmental monitoring, educational aspects of space technology applications and space systems in support of terrestrial infrastructures including information on the possibilities offered by current space technologies for the developing countries. A representative from each of the participating developing countries presented outlines of its national programme. At the panel discussions, the participants interacted very actively, providing information, comments, questions, recommendations and suggestions. (Details contained in document A/AC.105/656.)

Title, location and date	*Sponsoring country/ organization (host institute)*	*(a) Funding and nature of support* *(b) Number of participating countries and organizations* *(c) Total number of participants*	*Outcome of activity*
Second United Nations Regional Conference on Space Technology for Sustainable Development in Africa Pretoria, South Africa 4-8 November 1996	Government of South Africa and the United Nations	(a) Air travel and DSA (United Nations, South Africa, NASA, Nuova Telespazio, EOSAT, Inmarsat) (b) 21 countries (c) 120 participants	The conference in South Africa was convened so that Africa's decision makers and technical advisers could collectively deliberate and reach a common position on how space science and technology can be an effective tool in addressing the local needs of Africa and its peoples. In this connection, a number of speakers were invited to address not only the needs of Africa but also a variety of areas in which space science and technology could contribute to Africa's social and economic development. In the process, the issue of technology transfer, the contributions and participation of Africa to date in space science and technology, the examples of activities in other countries that could be of benefit to Africa and how Africa could contribute to the continuing evolution of space science and technology and be able to partake in the many benefits thereof were addressed. The conference concluded with a Pretoria Memorandum on Space Technology for Africa. This Memorandum reflected on Africa's relevance vis-à-vis the emerging twenty-first century technologies and called for an urgent African leadership conference at which Africa's decision makers will address Africa's need to understand space technology, its beneficial roles in national, social and economic development and the commitment required to accomplish the latter. (Details contained in document A/AC.105/658.)

Annex V

UNITED NATIONS PROGRAMME ON SPACE APPLICATIONS: SCHEDULE OF TRAINING COURSES, WORKSHOPS, CONFERENCES, SYMPOSIA AND SEMINARS IN 1997

Activity number	*Activity*	*Date and place*	*Objective*
1	United Nations/European Space Agency Workshop on Satellite Communications, in cooperation with the Centre for Space Science and Technology Education for Asia and the Pacific	20-24 January Ahmedabad, India	To expose participants to different satellite communication techniques particularly those applicable to distance education. In this connection, different satellite communications systems such as radio broadcasting, television broadcasting and interactive audio-video systems will be explored along with a variety of experiments that are being conducted in tele-education in Asia and the Pacific.
2	United Nations/United States of America Second International Conference on Spin-off Benefits of Space Technology: Challenges and Opportunities	1-4 April/October United States of America	To address the new opportunities in the transfer of space-related technologies to traditionally Earth-based industries and the ways in which developing countries can participate in and benefit from such efforts.
3	Seventh United Nations/Sweden International Training Course on Remote Sensing Education for Educators	5 May-13 June Stockholm and Kiruna, Sweden	To develop the knowledge and skills of university educators in remote sensing technology and to equip the participants with an ability to introduce elements of the technology, as appropriate, in the academic curricula of their own universities and institutes.
4	Fourth United Nations/European Space Agency Training course on ERS Data Applications or United Nations/European Space Agency Workshop on the Use of Satellite Communications for Information Networks, for English-speaking African countries	October Frascati, Italy	To expose participants to the practical use of satellite radar imagery and disseminate information on accessibility to the environmental and natural resources management data.
5	United Nations/European Space Agency International Workshop on Satellite Communications	September Haifa, Israel	The Workshop will provide opportunities for communications specialists and managers to explore the possibility of increasing regional and international cooperation as well as provide the participants with information on current state and future trends of communications technologies and their contributions to sustainable development particularly in developing countries.

Activity number	*Activity*	*Date and place*	*Objective*
6	COPINE: Workshop on Information Network for Africa	Second/third quarter Africa	To equip the operators of the COPINE facilities with necessary skills, particularly in operational requirements, maintenance and repair. User education, training and awareness-raising will be featured in the programme of the Workshop as well as the strengthening of the many existing links and the establishment of new long-term inter-institutional linkages that are supported by the COPINE project.
7	United Nations/Committee on Space Research Workshop on Data Analysis Techniques, in cooperation with the Centre for Space Science and Technology Education	September/October Brazil	Data are acquired by a variety of satellites and are stored in data archives. Data access, analysis and interpretation from Earth observation satellites will be the focal point of the Workshop.
8	Seventh United Nations/European Space Agency Workshop on Basic Space Science	September/October Tegucigalpa, Honduras	Knowledge in basic space science is a prerequisite to develop space science and technology at a higher level. Accordingly, the Workshop will address elements of education and teaching for space science and development.
9	United Nations/International Aeronautics Federation/European Space Agency Workshop on Space Science and Technology Education	October Torino, Italy	This Workshop will examine the different features of the programmes on space science and technology education globally, including the efforts of the United Nations and seek ways in which they could be harmonized and benefit from one another.